

## REMARKS

### Rejections Under 35 U.S.C. § 112

The examiner rejects claims 1-3, 7, 9 26-40, 42-56, and 57-65 as lacking description. According to the examiner, “[t]here is not a method for hydrating a polymer in the specification.” The examiner contends that the “claim language should be directed to the original method language.”

Claim 1 has been amended to change the word “hydrating” to “prehydrating.” The examiner contends that the phrase “even absent other solvating agents” introduces new matter. The phrase has been deleted from the claims; however, Applicant notes that the examples provide support for the phrase. In the examples, the claimed results are achieved “even absent other solvating agents.”

### Response

Applicants respectfully request withdrawal of the rejection for lack of support of the phrase “a method for prehydrating a polymer.” The following cited portions of the specification establish that the specification provides a proper antecedent basis for the phrase “a method for hydrating a polymer.”

The title of the application, “**Controlled Hydration of Starch in High Density Brine Dispersion,**” alone, provides support for the phrase “a method of hydrating a polymer”--namely, starch.<sup>1</sup>

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1 The specification defines water-soluble polymers at page 5, ll. 4-9, as

polymers that are capable of viscosifying the brine and/or providing filtration control for the brine. Such polymers are known in the art. Preferred polymers are non-toxic polymers which include, but are not necessarily limited to water-soluble starches and derivatized versions thereof, water soluble gums and derivatized versions thereof, and water-soluble celluloses, and derivatives thereof.

The background of the invention provides additional support for the phrase:

The viscosity of a drilling or completion brine typically is maintained using polymers, such as starches, derivatized starches, gums, derivatized gums, and cellulose. Although **these polymers** are water-soluble, they **have a relatively low hydration rate in brines because very little water actually is available to hydrate the polymers, particularly in high density brines.**

**Heating** a brine to at least about 140°F **will increase the hydration rate** of starches and/or other water-soluble polymers in the brine. **However, heating of brine is time consuming, expensive, and difficult to achieve in the field. Plus, heating of a brine will cause starch dispersed in the brine to build excessive viscosity** when subjected to high wellbore temperatures.

Less time consuming and expensive **methods that will effectively hydrate water-soluble polymers in high density brines without adversely affecting downhole viscosity are sorely needed.**

P. 2, l. 11 - p. 3, l. 1 (**Emphasis added**).

The specification describes a method of forming a “precursor polymer dispersion” of water-soluble polymers in a “precursor brine” before adding the polymers to a “final brine,” and explains that:

The invention is particularly important to high density brines because the degree of dispersion of dry starch particles, and the subsequent **degree of hydration** of such particles, is the controlling factor in how the starch performs in a high density brine. Where a brine is high density, *e.g.*, 11.6 lb/gal CaBr<sub>2</sub>, the initial particle dispersion of the starch is limited. As a result, a significant particle size is maintained and the **degree of hydration is limited. These limitations are alleviated if the starch is dispersed in the brine in the manner herein described.**

Page 4, ll. 1-14 (**emphasis added**).

As seen from the foregoing excerpts from the specification, the reason for forming the claimed precursor polymer dispersion described in the application is to achieve a desired level of prehydration of water soluble polymers, such as starch, before the polymers are added to a “final brine.” The desired level of prehydration is achieved by controlling the concentration and type of

salt in the precursor brine.

For the foregoing reasons, the specification does supply a proper antecedent basis for the claimed limitation, as required under MPEP Section 608.01(o). If the examiner maintains the rejection based on lack of support, then it is the examiner's burden to present "evidence or reasoning to explain why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims. Accordingly, the examiner should identify what portion(s) of the amendment lack support in the originally filed disclosure, and should fully explain the basis for the examiner's finding. The examiner also should comment on the substance of applicant's remarks." MPEP 2163.03.

### **Obviousness Rejections**

The examiner rejects claims 1-3, 7, 9, 14-16, 21-23, 26, and 29-41 as obvious over GB 2084586.

### **Response**

The examiner has the burden to establish a case of *prima facie* obviousness. MPEP 2142. The examiner has not established that the claims are *prima facie* obvious over GB 2084586 (the "GB patent") because the GB patent teaches the addition of hydrophilic polymers to **water**. The examiner has not pointed to a teaching or suggestion that the hydrophilic or water-soluble polymers should be added to a "precursor brine" comprising a "first salt comprising cations consisting essentially of cations of one or more multivalent alkaline earth metals."

The GB patent teaches "admixing" of "the hydrophilic polymer and **water as, for example, fresh water, distilled water**, etc." Page. 2, ll. 5-6 (emphasis added).

In contrast, claims 1 and 42 require the water-soluble polymer to be mixed with a

“precursor **brine.**” The “precursor brine” of claims 1, 42, and 57 each comprises a “first salt at a first density, said first salt comprising cations consisting essentially of cations of one or more multivalent alkaline earth metals.”

Claim 26 defines a “precursor polymer dispersion” designed to result in polymers in a “final brine” having a “final level of hydration” such that the concentration of the polymers in the final brine at this “final level of hydration” is “effective at downhole conditions to maintain an effective level of a property of said final brine selected from the group consisting of rheology, fluid loss control, and a combination thereof.

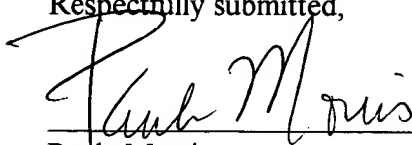
In other words, the method claims are directed to mixing the water-soluble polymers with a salt-containing brine--not with “water.” Similarly, the composition claims are directed to a brine containing the water-soluble polymers.

The examiner has not pointed to any teaching or suggestion that the “water” with which the “hydrophilic polymers” in the GB patent is mixed contains a salt, much less a multivalent salt, as required by the claims. The examiner therefore has the burden to point to some teaching or suggestion, either in GB or in another reference, to modify GB to replace GB’s water with the claimed precursor brine comprising a multivalent salt. Mere argument or supposition will not suffice. MPEP 2143.01; *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995). The examiner has not pointed to such a teaching or suggestion in the GB patent or in any other reference. The examiner therefore has not established that the claims are *prima facie* obvious over the GB patent. MPEP 2143.01.

## CONCLUSION

For all of the foregoing reasons, Applicant respectfully requests entry of the amendments and reconsideration and allowance of all of the pending claims.

Respectfully submitted,



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## CERTIFICATE OF MAILING

I hereby certify that this paper, along with any referred to as being attached or enclosed, is being forwarded to the Assistant Commissioner for Patents, Washington, D.C. 20231, via the United States Postal Service, First Class mail, Postage Prepaid, on Dec 8, 1999.



Ellen Peacock